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The Production of Graded Milk.*

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I have decided to bring this paper before you for two reasons, firstly—a purely selfish motive—in order that I may learn more about the subject from the discussion and, secondly, because I feel very strongly that in the production of graded milk we have a field in which we, as veterinarians, ought to play an important part.

The production of clean milk is highly important from the public health point of view, and I doubt not that in the near future it will become of even greater importance for several reasons. In the first place, milk is a natural food, the only perfect and complete food in the world, and the public are daily becoming educated to the fact: the result will be an increased demand for genuinely clean milk. By *clean* milk I mean milk which (a) contains no visible dirt and never has contained any; (b) contains few bacteria likely to cause premature souring; (c) contains no bacteria likely to cause disease. In the second place, milk is one of the few paying propositions left to the British farmer; the result has been a great increase in the number of producers, with a consequent flooding of the milk market. The obvious sequel to this increased competition has been the production of something a little better than the ordinary—cleaner milk. The same holds true of the distributor: there has been increased competition, resulting in bottled milk.

The Ministry of Health has watched all this increased competition and has availed itself of the opportunity to introduce The Milk (Special Designations) Order, 1923, and now The Milk and Dairies Order, 1926.

This is all a step in the right direction, and the result spells "Progress." Every fresh undertaking requires pioneers and I urge that our profession should seize the opportunity and *lead* in this matter and not wait until other professions have secured all the advisory posts and appointments and then begin to shout—we have missed the 'bus too often in the past; let us be sure of catching it this time and of securing a front seat.

Let me refresh your memories briefly as to the meaning of graded milk and the various grades.

Graded milk is milk which is produced and sold under licence of the Ministry of Health, and must conform to certain standards or degrees of purity, which standards must be maintained until it is delivered in bottles to the consumer.

There are four grades of milk:—

(1) Certified.
(2) Grade A (T.T.).
(3) Grade A.
(4) Pasteurised.

There is also a sub-grade which one might call Grade A pasteurised.

In order to make the position clear, I think it is necessary that I should read you Parts 1, 2, 3 and 4 of the Third Schedule of the Milk (Special Designations) Order, 1923.

Third Schedule.

Part 1: *Conditions Subject to which Licences for Selling Milk as "Certified" may be granted.*

A.—*The following conditions apply to producers only*:—

(1)—(*a*) The producer shall cause every animal of the herd to be submitted to an examination and to a prescribed tuberculin test at intervals of six months and shall produce to the licensing authority the veterinary surgeon's certificate and the certificate of the prescribed tuberculin test within seven days after the respective dates of those certificates. He shall not permit any animal to be injected with tuberculin except on the occasions of the prescribed tuberculin tests;

(*b*) No animal, other than an animal taken directly from a herd in respect of which a licence for the sale of "Certified" or "Grade A (Tuberculin tested)" milk is in operation, shall be added to the herd unless it has passed a prescribed tuberculin test immediately before it is so added;

(*c*) Where any animal is certified as re-acting to a prescribed tuberculin test it shall forthwith be removed from the herd, and where any animal is certified as showing evidence of any disease which is likely to affect the milk injuriously it shall be isolated or removed from the herd, as the case may require. The milk from an animal so isolated shall not be sold as milk from the herd. The producer shall inform the licensing authority of the reasons for the isolation or removal of an animal and, in the case of removal, of the manner in which it has been disposed of;

(*d*) A suitable system shall be adopted for the marking for purposes of identification of the animals in the herd, and a complete register of such animals shall be kept; and

(*e*) The herd shall be completely isolated from all other cattle.

(2) The milk shall be bottled on the farm immediately after production.

(3) Every bottle containing the milk shall be closed with a suitable tightly fitting disc and covered with a suitable outer cap overlapping the lip of the bottle and so fastened as to form a complete seal. The cap shall bear the name and address of the producer or of the dairy where the milk is produced, the day of production and the words "certified milk." The words "produced from cows which have passed the tuberculin test" may be added, but, except with the consent of the licensing authority, the cap shall bear no other words.

B.—*The following conditions apply to all holders of licences to sell milk as "Certified"*:—

(1) The milk shall not be removed from the bottles or the seals broken before delivery to the purchaser.

(2) On a sample being taken at any time before delivery to the consumer, the milk shall be found to contain:—

(*a*) not more than 30,000 bacteria per cubic centimetre; and

(*b*) no coliform bacillus in one-tenth of a cubic centimetre.

(3) The milk shall not at any stage be treated by heat.

* Presented to the Derbyshire Division at Derby on 12th October, 1926.

Part II: Conditions subject to which Licences for Selling Milk as "Grade A (Tuberculin tested)" may be granted.

(1) The conditions set out in paragraph (1) of sub-division A of Part I, in paragraph (7) of sub-division A of Part III, in sub-division B of Part III, and in paragraph (2) of sub-division C of Part III, of this Schedule shall apply with the substitution in Part III of the designation "Grade A (Tuberculin tested)" for the designation "Grade A."

(2) The milk shall not at any stage be treated by heat.

Part III: Conditions subject to which Licences for Selling Milk as "Grade A" may be granted.

A.—*The following conditions apply to producers only:*—

(1) No animal which to the knowledge of the owner of the herd has at any time been tested with tuberculin and has re-acted to the test shall form part of or be added to the herd.

(2) The producer shall cause every milch cow belonging to the herd to be examined once in every three months, and shall produce to the licensing authority the veterinary surgeon's certificate within seven days after the date of the certificate.

(3) Where any animal is certified as showing evidence of any disease which is likely to affect the milk injuriously it shall be isolated or removed from the herd, as the case may require. The milk from an animal so isolated shall not be sold as milk from the herd. The producer shall inform the licensing authority of the reasons for the isolation or removal of an animal and, in the case of removal, of the manner in which it has been disposed of.

(4) If at any time it is shown to the satisfaction of the licensing authority that tubercle bacillus is contained in the milk, the producer shall take all necessary steps to ascertain which animals are diseased and to remove them from the herd and shall inform the licensing authority how such animals have been disposed of.

(5) A suitable system shall be adopted for the marking for the purposes of identification of the milch cows belonging to the herd, and a complete register of such cows shall be kept.

(6) The cows in milk belonging to the herd shall be kept separate from all other cows in milk.

(7) Except where the milk is bottled by the producer in accordance with the procedure for bottling hereinafter specified, the milk shall be consigned from the dairy where it is produced in an unventilated sealed container which shall be labelled or marked in a suitable manner with the address of the dairy, the day of production (with the word "morning" or "evening" according to the time of milking), and the words "Grade A Milk."

B.—*The following conditions apply to persons other than producers:*—

(1) Except where the milk is delivered to the consumer in the containers in which it is received, the seals being unbroken, it shall be delivered either in bottles or in other suitable containers of not less capacity than two gallons.

(2) Every bottle containing the milk shall be closed with a suitable tightly fitting disc and covered with a suitable outer cap overlapping the lip of the bottle and so fastened as to form a complete seal. The cap shall bear the name of the dealer by whom the milk was bottled, and the address of the licensed bottling establishment, the words "Grade A Milk" and the day of production and shall except with the consent of the licensing authority bear no other words. Where containers other than bottles are used, every container shall be closed with a tightly fitting cover and shall be suitably sealed and labelled.

C.—*The following conditions apply to all holders of licences to sell milk as "Grade A":*—

(1) The milk shall not at any stage be treated by heat unless a licence to sell such milk as "Pasteurised" has been granted under this Order, and where such a licence has been granted the term "Pasteurised" shall be added after the designation "Grade A Milk" wherever such designation is used in connection with the sale of such milk or the labelling or marking of receptacles containing such milk.

(2) Milk sold as "Grade A Milk" shall be produced and treated under such conditions that on a sample being taken at any time before delivery to the consumer the milk shall be found to contain:—

(*a*) not more than 200,000 bacteria per cubic centimetre; and

(*b*) no coliform bacillus in one-hundredth of a cubic centimetre.

(3) Milk sold as "Grade A Milk Pasteurised" shall be produced and treated under such conditions that on a sample being taken before delivery to the consumer the milk shall be found to contain:—

(*a*) in the case of a sample taken at any time before the 1st day of January, 1924, not more than 50,000 bacteria per cubic centimetre, and no coliform bacillus in one-hundredth of a cubic centimetre; and

(*b*) in the case of a sample taken at any time after the year 1923 not more than 30,000 bacteria per cubic centimetre, and no coliform bacillus in one-tenth of a cubic centimetre.

Part IV: Conditions subject to which Licences for Selling Milk as "Pasteurised" may be granted.

(1) The milk shall be pasteurised, that is to say, retained at a temperature of not less than 145° and not more than 150° Fahrenheit for at least half an hour, and be immediately cooled to a temperature of not more than 55° Fahrenheit.

(2) The milk shall not be so heated more than once and shall not be otherwise treated by heat.

(3) The type of apparatus used for pasteursing and the methods employed shall be such as are satisfactory to the licensing authority.

(4) Every vessel containing the milk shall bear a suitable label with the words "Pasteurised Milk."

(5) On a sample of the milk being taken after pasteurisation and before delivery to the consumer, the milk shall be found to contain:—

(*a*) in the case of a sample taken at any time before the 1st day of January, 1924, not more than 200,000 bacteria per cubic centimetre; and

(*b*) in the case of a sample taken at any time after the year 1923 not more than 100,000 bacteria per cubic centimetre.

(6) Until the 1st day of January, 1924, the requirements contained in paragraphs (1) and (2) of these conditions shall be deemed to be satisfied if the milk is treated not more than once by a suitable heating process and immediately cooled to a temperature of not more than 55° Fahrenheit.

The nomenclature is not an admirable one—it is confusing, misleading, and meaningless; few of the lay public (few indeed of our medical men) know the meaning of certified milk, and Grade A, and Grade A (T.T.) are to the lay mind indistinguishable. In reality, from a public health point of view, Certified and Grade A (T.T.) are much more closely allied than Grade A (T.T.), and Grade A, and I hope that 'ere long we shall have Certified, and Grade A (T.T.) classified as Grade A, and the present Grade A as Grade B, or else have Grades A, B, C, and D. I am all for classifying pasteurised as Grade D, because I look upon it in the light of a necessary evil.

At the present time, pasteurised milk may be necessary for us in large towns where it is impossible to get an adequate supply of fresh raw milk, but the pasteurisation is seldom uniformly satisfactory and is, in my opinion, an incentive to slovenliness in the production of milk, and this is a retrograde step. I have frequently heard it said by farmers that it did not matter because the milk would be either pasteurised or sterilised. Neither pasteurisation nor sterilisation

will remove, for example, urine contamination from milk, and no one wants to drink urine, sterile or not. Pasteurisation is, after all, in practice, only a proportional process. The cleaner the milk before pasteurisation, the cleaner it will be afterwards. It is not possible by pasteurisation to turn the dirtiest milk into the cleanest.

It has been said that only two people would pasteurise milk, the one a fool and the other a rogue, because only a fool would pasteurise good milk and only a rogue would pasteurise bad milk. Milk which has been treated by heat does not readily sour—this is unfortunate, as pasteurised milk, when exposed to air, may become grossly contaminated, and yet not show that it is days old or unfit to drink.

I consider that the sub-grade, Grade A Pasteurised, is superfluous, because I can conceive of no reason why one should wish to ruin Grade A milk by pasteurising it.

It is highly probable—indeed almost inevitable—that the bacterial count permissible for Grade A Milk will be halved, if not quartered, in the near future. No one should be allowed to produce milk which could not conform to the standard of Grade A: this is not at all difficult to obtain even in bad sheds; it is *method* which counts most. In the Ministry of Health Report Card for Inspection of Dairy Farms in the maximum of 500 marks no less than 400 are allotted for methods, and 100 for equipment.

One of the most progressive dairy companies pays a clean milk and a butter fat bonus, and has 140 farmers supplying it with milk: of these, 100 are nearly always within the 200,000 count allowed for Grade A, the first twelve within the 1d. list are usually from 1,000—10,000; on several occasions, indeed, the counts have been in the hundreds, and on one occasion 110 was registered, and this from a farm where conditions are primitive—bad standings and a narrow gangway—and where the milk was milked into open pails, carried along a narrow causeway flanked by a midden and across a road to be cooled in the scullery—this farmer headed the 1d. list 16 months out of 18, and also topped the list for butter fat content.

In passing, I might mention that the two occasions, only, upon which he was not at the top of the 1d. list were when they washed the udders instead of rubbing them with a dry cloth; this does not condemn the practice of washing the udders, but it does show that if damp or wet cloths are used, the washing must be thorough, otherwise dry rubbing is safer. This particular farmer is now producing Grade A (T.T.) and at his initial test had only two reactors, since when he has had no others.

In the production of Graded Milk, then, it is not essential, although it is desirable, that the sheds should be well constructed.

The enforcement of the Milk and Dairies Order, 1926, will, of course, greatly facilitate its production; in fact, milk can hardly avoid being of Grade A quality. I had thought at one time of making the title of this paper "The Working of the Milk and Dairies Order, 1926," because, here again, we, as a profession, must be *au fait* with this Order to take our rightful position in its working.

You will, I hope, forgive me, therefore, if I refer to a few of the salient features of this Order.

The October number of *The Milk Industry* says:

With very few exceptions, all the provisions of the above Order came into operation on the 1st October. We will deal with the exceptions right away.

Farmers are not required (1) to provide any extra windows in their present cowshed or dairy or (2) to provide a suitable water supply, or (3) to have the floor of their cowshed concreted with a slope to carry off all liquid matter until 18 months after receiving a notice requesting them to do so from their sanitary authority. So far as (3) is concerned, the sanitary authority cannot give notice for this flooring to be done prior to the 1st April, 1928. The obligation on a farmer to cool his milk to within 5 deg. Fahr. of his water supply does not commence until the 1st April, 1927.

The provision(1) that milk vessels must not be used either by farmer or dairyman unless the interior surface can be readily cleaned, and (2) that vessels used for carrying milk by rail or road must have soldered nameplates and be of a pattern to exclude dust or the return of the milk inside, do not become operative until the 1st October, 1928.

All the other provisions of the Order are operative now. Therefore:

Every dairy farmer and dairyman shall—

(1) if not already registered, register both himself and his premises with the local authority.
(2) in a building in which milking or any other process is carried on in hours of darkness, provide adequate lamps or other artificial light,
(3) empty and cleanse so often as necessary receptacles for storage or conveyance of water,
(4) cause all vessels and appliances used for containing, measuring or stirring milk to be kept thoroughly clean. For this purpose every vessel, lid and appliance must be washed as soon as may be after use—but no oxidising or preservative must be used—and scalded with boiling water or steam before it is used again. When not in use they shall be stored in a clean place and protected from dust and dirt.

Every dairy farmer shall—

(1) protect the water supply for his cows against contamination by drainage.
(2) not keep swine or poultry in a cowshed, milking room or room where milk utensils are kept, or in a directly communicating room or shed.
(3) cleanse his cowshed from time to time so that it shall be at all times reasonably clean and sweet.
(4) cause the ceiling, or roof, and the walls of his cowsheds, unless painted, varnished or tiled, to be lime-washed twice a year, once in April or May, and once in September or October.
(5) have all dung removed from a cowshed where milking is done at least once a day and keep the entrance clear of manure,
(6) have milking done in proper light, whether in daylight or dark,
(7) before milking remove all dirt from the flanks, udder and teats of the cow with a clean, damp cloth.
(8) keep milking stools thoroughly clean; the hands of the milker must be thoroughly washed and dried before milking,
(9) as soon as possible after milking remove the milk from the cowshed to a suitable milk-room or else keep it in a covered receptacle,
(10) not remove dry bedding or dusty matter from the cowshed within half-an-hour before milking commences.

Every dairyman shall—

(1) not deposit milk where it is liable to become contaminated; in particular not in any kitchen, scullery, living or sleeping-room, or in a room communicating

by door or window with any closet, ashpit, or which has any inlet to a drain which is not efficiently trapped,

(2) protect vessels containing milk from dust, flies or contamination,

(3) carry out any processing of milk—such as bottling or pasteurising—and keep appliances where they would not be liable to contamination,

(4) cause all churns or delivery receptacles when empty ready for return—other than bottles—to be thoroughly cleansed and securely closed before they leave his control,

(5) have every vessel used for conveying or containing skimmed or separated milk marked in large type with the words "Skimmed Milk" or "Separated Milk."

(6) not, unless for the purpose of checking or sampling, open any churn or vessel containing milk or transfer milk from one receptacle to another *in any railway van or on any railway station*,

(7) In the case of milk to be delivered in bottles, cause every such bottle to be filled and closed on registered premises; and no person shall remove or tamper with the disc at any time after it has left such premises and before it is delivered to the consumer,

(8) use all practicable precaution to prevent milk in the course of conveyance or distribution from unnecessary exposure to heat and from being contaminated,

(9) keep the interior of his vehicle at all times clean and not carry in it at the same time as the milk any live animal or other article likely to contaminate the milk.

Generally—

Persons when engaged in producing or distributing milk shall keep their clothing and person in a cleanly condition.

In the event of any member of his household contracting infectious disease, such person shall as soon as he is aware of it notify the occupier of the premises, and the occupier shall at once inform the Medical Officer of Health.

Ultimately, I hope rather sooner than later, all milk will be produced from tubercle-free cows. As this is the goal to be aimed at, I propose taking Grade A (T.T.) milk as the standard, for, in my opinion, this is *the* milk of the future, because, as I have shown, when this new Act is enforced all milk will be of Grade A standard—then to go one better it will have to be T.T. Certified milk will ever remain the milk of the few from the producer's point of view, for reasons which are obvious.

One might divide the difficulties facing the producer of Grade A (T.T.) into two groups—those connected with his shed, and those connected with his cows. The wise man will begin to face the former in the Spring, when his cows are out. The chief faults in most sheds are that the standings are too long and frequently too wide, the gutters are too shallow and the floors are bad. Ventilation often does not exist; there are frequently large openings behind the cows, which usually serve both as air and light inlets; consequently, when they are shut, as they almost invariably are in the winter, the shed is deprived both of light and air.

To my mind, cubic space is the least important of the Ministry's recommendations; true, the less cubic space available the more frequently will the air require to be changed, this constituting a so-called draught, but even this is of no consequence if the inlets and outlets are in their correct places. Within reason, the inlet should be as low as possible, and the outlet should be at the ridge. In addition, the inlet should be in front of the cow—the best place is probably just above the top of the manger, and a displaced brick or a 4in. or 6in. drainpipe through the wall is adequate. The outlet, as I have said should, if possible, be at the ridge and should, if possible, have some means of being controlled, because then the amount of air let in is automatically governed by the amount let out.

The ideal outlet is undoubtedly Findlay's system. It is, however, not absolutely essential to have it controlled, but when not possible to have the outlet controlled, it can usually be arranged to control the inlets by means of shutters. This, again, is not absolutely necessary, but it is advisable. Wherever possible, roof lights should be used; one square foot of roof lighting is equal to at least 1 square yard of wall lighting and gives about an hour's longer daylight in the evening. Roof lights should be placed so as to throw the light on to the cows' backs. When there is a loft overhead so that roof lighting and ridge ventilation are not practicable, the best substitute is a window of the Hopper type placed high up in the wall behind or both in front of and behind the cows. Hopper windows can be either inlets or outlets and are the most useful type of window for cowsheds or dairies.

So much, then, for light and air.

The ideal method in which to tie cows is by a yoke or median chain; this, whilst giving the cow freedom of head movement, prevents her moving forwards or backwards; it also does away with the necessity of partitions, those harbourers of dirt, and to a large extent it eliminates the necessity for manger divisions.

The length of the standing is *most* important in the production of clean milk; this should vary from 4ft. 10in. to about 5ft. 3in. for a large Shorthorn; when tubular divisions are used, a width of 6ft. 6in. for a double standing is enough. The gutter should be at least 8in. deep and cannot be too wide. The gangway behind the gutter cannot be too wide, and should be at least 5 ft., though 9 ft. is better. I wish that all feeding passages could be abolished in milk sheds and the width be added to the milking passage.

In many cases when altering sheds it will be unnecessary to deepen the gutters, as often if one deepens the gutters it will be found to upset the whole drainage system; it is better, whenever possible, to raise the standings four, five, or six inches. When making any alterations to sheds, advantage should be taken of the opportunity to have all angles filled in to form curves; this is easily done—all that is required is for cement to be thrown into the angles and a beer bottle run along to form the curve; there should be only one square angle in a shed and that the edge of the gutter and standing. Walls should, whenever possible, be cement-washed to facilitate cleansing; floors should, of course, be rendered impervious; this is not a costly job. In a double shed the cows should always be head to the wall. It is seldom possible to get suitable inlet ventilation in a shed where the cows are tied head to head. It is my experience that, in a herd of cows tied head to head, the percentage of reactors is invariably higher.

Alterations, then, having been carried out, the whole shed should be disinfected; for woodwork nothing is so satisfactory as a plumber's blow lamp, and afterwards the whole should be limewashed.

The shed is now ready for the tested animals.

I do not wish to dwell upon the merits or demerits of the various tests; personally, I have forsaken the subcutaneous for the intradermal because in a single-handed practice I find it much more convenient and also more accurate, especially with young stock. I have formed this opinion after testing nearly 1,000 head by means of the intradermal during the last 18 months. For the requirements of the Ministry of Health, I apply the intradermal and the ophthalmic. I am, however, inclined to agree with the suggestion put forward by some members at the Sanitary Congress that the intradermal and subcutaneous should be used alternately on herds regularly tested. I propose adopting this procedure myself with a few herds with the milking cows only. I shall never revert to the subcutaneous for young stock.

In freeing a herd, happy is the man who has two farms—his difficulties are negligible. Such, however, are in the minority and it is of the majority that one must think.

Most milk producers have at least two sheds; if not, they have perhaps a double shed into which they can divide "the sheep and the goats": but for those who have but one shed it is still possible for them to place the reactors and non-reactors at opposite ends. They should be so arranged that the drainage from the non-reactors flows towards the reactors; if possible, a double standing should be left between them; *anything* is better than nothing, and no little thing, however small, to effect isolation and separation should be omitted.

The essential thing is to separate *somehow*, *anyhow*, *immediately* the test has been carried out; the importance of this is vital, fundamental; any procrastination is fatal, infection may be so unexpected and so insidious. In one herd which I have now tested three times, at the first test I had 24 reactors—please note this carefully—in this herd were 15 heifers, they were in a shed to themselves, the other 5 were tied up amongst the cows; all the 10 passed, but 4 of the remaining 5 reacted; infection had undoubtedly taken place during the few months those heifers had been tied up with the cows.

The next test there were 12 reactors, and the last test there were 4 reactors; in every case the last four reactors had been tied at the previous test between two reactors. This will, I think, illustrate the greatest difficulty which besets us in ridding a herd of tuberculosis—that is, the indefinite period of incubation during which, of course, no animal will react to any test, and it is so easy for a cow in the incubative stage to become infective and infect others between one test and the next. This is the reason that heifers from an accredited herd fetch such a high price, as one has a reasonable assurance that they are tubercle free.

In the production of Certified Milk in a herd with which I have been associated, I have not allowed the introduction of any animal which has not passed the test three times, because each animal in that herd has now survived three tests, and I am always suspicious of the incubative period in an animal bought subject to one test.

Another fundamental principle in ridding a herd is never to give an animal the benefit of a doubt—give the benefit to the *herd*, and reject the doubtful cow. It is often argued that a cow may belong to a valuable herd—perhaps she is worth 100 guineas—all the more reason why she should be rejected rather than run the risk of infecting several equally-valuable animals.

All calves should, of course, be reared on the milk from the free cows.

To produce graded milk successfully, that is a milk which will be uniformly clean, it is necessary to have enthusiasm amongst the milkers.

The cows must be kept clean; this is greatly facilitated by the quarters and udders being clipped, and the tails also in the winter—I have yet to see a bad udder resulting from clipping. If the udders are wet they should be washed and then dried, but if they are dry, I do *not* think it is necessary to wash them, but they should be well rubbed with a clean dry cloth.

No dusty food should be fed during, or immediately prior to, milking. The milkers should wear clean smocks and caps. This is a point which I stress. Picture to yourselves the clothes and cap of the average farm labourer, and you will see that they are not conducive to the production of clean milk. A supply of clean water—preferably a tap, not a basin (one must make it fool proof if possible, and if a basin is there, all will use the same water!), soap and a towel should be provided for the milkers, whose hands should be washed frequently during the milking process. I have advocated, and I know several farms where this is done, that the hands of each milker should be washed after milking each cow, while the one in charge of the cooling weighs and empties the milk.

Covered pails have been proved to be infinitely preferable to the open pail. At Reading, experiments were carried out, and it was found that the reduction of organisms in the covered as compared to the open pail was 64 per cent. Probably the best type of covered pail is the Davis, in which the aperture is nearly vertical and is only 7in. wide by 5in. deep.

The milkers, then, in smocks with clean hands, a sterile pail and seated upon a clean stool, are in a position to produce clean milk from a clean udder. The foremilk should, in every case, be discarded; dry milking is a *sine quâ non*. Each cow's milk should be immediately taken to the weighing room and then cooled. It is most important that milk should never be left to stand in the shed, nor should it be poured from one pail to another in the shed, as by so doing a draught is created and bacteria from a heavily-laden atmosphere are drawn into the pail with the milk.

I have known farmers get into the ½d. and 1d. list of the dairy company to which I have previously referred, for low bacterial counts immediately they gave up the habit of pouring

milk from one pail to another. From the cooler, it is run either into the sterile bottle, when it is immediately capped and sealed, or into a sterile churn, which is also sealed.

Then follows the most important procedure of washing and sterilising the utensils. All utensils should be immediately rinsed in cold water, then scrubbed in hot, strong soda water, after which they should be again rinsed in cold water before being put into the sterilising chest or into the cylinder, where they are steamed at 210° for 25-30 minutes. The door or lid is then lifted to allow the steam to escape, after which it is closed and left so until the utensils are again needed. By allowing the steam to escape the utensils dry clean, and will not rust, as is the case if they are allowed to dry in the water of condensation.

The milk house, or dairy, is of the utmost importance, and the contemplation of what is required deters many. This is unfortunate, as the building need not be costly; in fact, very frequently an old building adjoining the cowshed can be utilised. In one instance I had a cart hovel converted, and it now makes an admirable dairy.

It should consist of two, or preferably three, compartments, none of which need be large. In the first should be a convenience for weighing the milk—this compartment should, if possible, lead out of the shed. After being weighed, it is poured into a receiving pan which should be fairly high up against the wall; from this it is conveyed in a pipe through the wall into a strainer on the other side; it passes through the cotton wool filters on to the cooler; from the cooler the milk is either bottled direct or else passes into a churn.

The cooler should be so constructed that the rings are neither too close nor too deep, so as to facilitate cleaning. The water used for cooling is of extreme importance; spring or deep well water is best. The keeping qualities of the milk depend to a large extent upon the temperature to which it can be cooled—it should be as near 45° F. as possible—this is one of the points upon which the Ministry of Health lay great stress.

For producers of certified milk, it is often necessary to instal a brine cooler, which enables the milk to be cooled down in the region of 2° F. Usually the brine is passed through the last three or four rings of the cooler. The brine can be used over and over again, and the brine chamber can be used for storing the milk overnight.

In the third compartment the washing and sterilising takes place. The best apparatus which I know for the purpose is Barford and Perkin's boiler and cabinet; the cost of this is about £35. It consists of a steam generator with a hot water reserve of thirty gallons; the fire burns anything and one can get thirty gallons of boiling water in less than half an hour. An armoured hose leads to the sterilising chest.

This, as I have said, is the best apparatus, but it is not essential. An ordinary kitchen copper of thirty gallons capacity will serve—this should, if possible, be stoked from the outside; on top of this copper can be placed a galvanised cylinder, the base of which is perforated with one-inch holes; the base is fitted with a flange which fits the copper. In this the utensils can be placed; the cylinder is closed by a tightly-fitting lid and the utensils sterilised for half an hour. The cylinder is then lifted off the copper, which is then covered with a tightly-fitting flanged lid, in the centre of which is bored a 2in. hole; into this hole a piece of iron tubing is fitted; the churns are then inverted one at a time over this aperture and sterilised. The cost of the lid is about 20s., and the cost of the cylinder is about 35s.

The wash-house should also be fitted with a sink and a supply of cold water.

The floors of the milk house should be concreted, and the walls either rendered or cement-washed; the roof should be match-boarded and painted white; each compartment *should* be well lighted.

To recapitulate, then, *clean* milk can be produced under *practical* conditions. The first essential is a clean, healthy cow. Then the method of the milkers and the type of milking pail used play an important part, but the keeping quality of the milk depends to an equal extent upon the cleanliness of all the vessels with which the milk comes in contact in its progress from the cow's udder to the consumer's table. Steam on a dairy farm is essential.

Whilst emphasising the extreme importance of cleanliness, it should be clearly understood that the cleanest milk will only keep sweet for a limited time, which period is determined by the temperature at which the milk is maintained. Milk that will keep sweet for seven days at 50° F. will seldom last more than three days at 60° F., and should the temperature be raised to 70° F., it cannot be expected to remain sweet for more than forty-eight hours from the time of production. Every possible precaution should, therefore, be taken to ensure a low temperature.

Gentlemen, in our hands to a great extent depends the future and the success of graded milk. I conceive it to be our duty to push this in every way possible, remembering that it is by education more than by legislation that the public in increasing numbers will buy graded milk.

It is for us to impress upon the consumer that he does not pay sufficient attention to his milk supply. Think of the tender care exercised by the average man over his choice of his whisky and his tobacco; he should exercise a similar solicitude over the choice of his daily milk.

What is the position to-day? It is within the power of the consumer to purchase Certified Milk, Grade A (T.T.) Milk, Grade A Milk, Grade A Pasteurised, or Pasteurised Milk—all sold under licence. On the other hand, if the consumer chooses he can continue to buy—just milk. If he does so, he has no real guarantee that it is either clean or free from disease; he does not even know that it may not have been pasteurised. Many people have not yet grasped the possibilities which milk, sold under licence, offers to the public. One looks forward to the day when all milk will be graded, and all milk will be bottled, so that the public

will have a reasonable guarantee that they do receive the genuine article for which they pay.

Subsequent contamination of milk, frequently, one might almost say always, occurs after it is delivered to the customer. A receptacle for milk should always be sterile. In 99 per cent. of houses it never is; at the best it is visibly clean, which cleanliness has been obtained perhaps by washing in dirty water, after which the receptacle is dried by a grimy cloth. The receptacle is then, perhaps, placed upon the window-sill, or upon the doorstep, after which the housewife complains because the milk soon goes sour. Thank heaven it does go sour, otherwise our infantile mortality would be even higher than it is. One even sees people who purchase bottled milk empty the contents into a jug. What stupidity! Why empty out of a sterile receptacle into one probably only half clean? Bottled milk should be placed upon the table and the milk poured from the bottle into the cups. One has seen other bottles not good to look upon, whose contents are vastly inferior to milk, placed upon the table, therefore why not milk bottles?

The medical profession are only just awaking to their responsibility in this matter—local authorities as a body are still asleep. Who, then, will rouse and educate the laity? Gentlemen, it must be the profession to which you and I have the honour to belong.

Death of Dr. Sydney Dodd.

"The death occurred yesterday morning, at his residence, of Dr. Sydney Dodd, lecturer in veterinary pathology and bacteriology at Sydney University," says *The Sydney Daily Telegraph* of October 18th. "Dr. Dodd's health had not been good for some months, but his condition was not regarded as serious until quite recently.

"Dr. Dodd, who held the degree of Doctor of Veterinary Science, and was a Fellow of the Royal College of Veterinary Surgeons, acted for some time as assistant to Sir John M'Fadyean, after qualifying at the London Veterinary College. Subsequently he accepted a veterinary position with the South African Union Department of Agriculture, where he gained extensive knowledge in many tropical diseases. Later on he came to Australia as Veterinary Pathologist to the Queensland Government, and later joined the staff of Melbourne University Veterinary School. In 1911 he was appointed, on the recommendation of Professor Stewart, as Lecturer in Pathology and Bacteriology at the Veterinary School in the University of Sydney, which position he held till his death.

"Dr. Dodd was not only a remarkably sound teacher, but also an ardent research worker, and the results of his investigations have considerably advanced the world's knowledge with regard to the true nature and causes of many diseases in animals. Recently it was arranged, at the invitation of the Council of Scientific and Industrial Research, that he should concentrate on the solution of certain problems associated with Caseous lymphadenitis and the so-called "Black Disease" in sheep. Consequently, Dr. Dodd's death is not only greatly regretted by his colleagues at the University and the students of the Veterinary School, but it constitutes a distinct loss to the scientific world."

Folliculitis and Impetigo of the Cow's Udder.*

By Tom Hare, M.B., Ch.B., B.V.Sc., M.R.C.V.S.,
The University of Liverpool.

Twelve months ago, at a meeting of the Lancashire Veterinary Medical Association, the author presented a preliminary survey of his investigation of Folliculitis and Impetigo as affecting the udders of "graded" milch cows.[1] By this address, the author sought to emphasise the difficulties encountered by the veterinary clinician who is called upon to interpret certain provisions of recent Milk and Dairies enactments. While these Government regulations defined with precision the action to be taken upon the declaration of certain affections, they permitted an undue latitude in the clinician's interpretation of the nomenclature and nature of the diseases specified. But it is from the Veterinary Profession and not from any Government Department that the scientific definition of these diseases should come. Thus, since it was felt that the responsibility for the difficulties encountered rested more with ourselves than with Government, the author deemed it advisable to present his views, even though the outbreak of dermatitis had not been arrested.

The address also covered the etiology and pathogeny of the two infections as understood at the time of its compilation. Now, after the lapse of twelve months, it is possible to review these aspects of the outbreak, making additions or amendments to the preliminary records where required. The final evidence of dermatitis in the head was observed in March, 1925, and up to the time of writing the animals have been examined frequently for any signs of a recurrence with negative results.

Folliculitis.

Folliculitis was defined in the preliminary report as a slowly spreading, suppurative inflammation of the pilo-sebaceous glands, due to the *Staphylococcus aureus*. The initial lesion, consisting of discrete superficial papules which rapidly develop into pustules, appears on the udder within the "teat quadrant," spreading by successive crops upwards into the groin or perineum, and even on to the skin over the inside of the thigh. The majority of pustules are perforated by a single lanugo hair.

The course of treatment applied was described in detail and emphasis was laid upon certain of the more important properties of a "graded" herd which impose restrictions upon the therapeutist. Prevention of further spread in the herd was the main objective of the treatment, which, briefly, consisted of the elimination of contact between the eruption and a healthy animal, and the destruction of each individual pustule as it appeared. At the time professional advice was sought, eight of the sixteen cows within the shippon were affected with folliculitis, and before the eruption was eradicated seven additional cases and one recurrence had been found: *i.e.*, 50 per cent. of the herd were affected within the

* The publication of this article has been unavoidably delayed.—Ed.

TABLE A.—The summarised Case Records of the entire Herd during the period of exposure to Folliculitis and Impetigo.

Cow No.	Introduced into Herd.	Last Calving.	Lesion.	Lesion first observed.	Interval after Calving.	Crusts Separated.	Duration of Lesions.
1 S.	27–7–23	2nd, 25–3–25	Follic.	28–6–25	95 days	17–8–25	50 days.
2 S.	2–1–24	1st, 25–3–25	Follic.	30–6–25	97 days	17–8–25	48 days.
3 J.	18–9–24	4th, 26–5–25	Follic.	31–5–25	5 days	27–8–25	88 days.
4 J.	18–9–24	2nd, 26–7–25	Nil.	Nil.	Nil.	Nil.	Nil.
5 J.	11–11–24	1st, 29–1–25	Follic.	20–6–25	171 days	4–11–25	137 days.
6 J.	11–11–24	1st, 3–2–25	Follic.	14–7–25	164 days	9–9–25	57 days.
7 S.	18–11–24	1st, 14–3–25	Nil.	Nil.	Nil.	Nil.	Nil.
8 S.	18–11–24	1st, 31–5–25	Follic.	4–6–25	4 days	9–9–25	97 days.
			Impetigo	5–9–25	128 days	4–10–25	30 days.
9 J.	11–2–25	1st, 28–2–25	Follic.	14–7–25	136 days	9–9–25	57 days.
			(Recurrence)	4–11–25	249 days	3–2–26	91 days.
10 S.	17–5–25	3rd, 18–3–25	Follic.	25–7–25	129 days	(Sold 12–9–25)	(Not clear).
11 S.	2–7–25	2nd, 18–6–25	Impetigo	14–8–25	57 days	(Sold 21–8–25)	(Not clear).
12 J.	24–7–25	1st, 24–7–25	Impetigo	4–8–25	11 days	27–8–25	23 days.
13 J.	24–7–25	1st, 3–8–25	Impetigo	5–8–25	2 days	4–9–25	30 days.
			Follic.	27–8–25	24 days	4–11–25	69 days.
14 S.	27–7–25	3rd, 17–7–25	Follic.	10–8–25	24 days	30–8–25	20 days.
15 S.	27–7–25	3rd, 17–7–25	Impetigo	28–7–25	11 days	17–8–25	22 days.
			Follic.	11–8–25	25 days	3–2–26	176 days.
16 S.	27–7–25	3rd, 17–7–25	Impetigo	4–8–25	18 days	27–8–25	23 days.
17 S.	14–9–25	1st, 2–10–25	Follic.	9–10–25	7 days	3–2–26	117 days.
18 S.	14–9–25	2nd, 14–10–25	Nil.	Nil.	Nil.	Nil.	Nil.
19 S.	14–9–25	2nd, 28–9–25	Follic.	3–10–25	5 days	16–3–26	164 days.
20 S.	14–9–25	2nd, 22–9–25	Impetigo	2–10–25	10 days	7–11–25	35 days.
21 S.	14–9–25	2nd, 7–9–25	Follic.	18–9–25	11 days	4–11–25	48 days.
22 S.	17–9–25	1st, 15–9–25	Follic.	20–9–25	5 days	16–3–26	178 days.
23 S.	30–10–25	1st, ?–12–24	Nil.	Nil.	Nil.	Nil.	Nil.
24 S.	30–10–25	2nd, 29–9–25	,,	,,	,,	,,	,,
25 S.	26–11–25	3rd, 19–11–25	,,	,,	,,	,,	,,
26 S.	10–12–25	2nd, 27–11–25	,,	,,	,,	,,	,,
27 S.	10–12–25	3rd, 3–12–25	,,	,,	,,	,,	,,
28 S.	23–12–25	2nd, 16–12–25	,,	,,	,,	,,	,,
29 S.	28–1–26	? 24–1–26	,,	,,	,,	,,	,,
30 S.	28 1 26	? 23–1–26	,,	,,	,,	,,	,,
31 S.	12–3–26	2nd, 8–3–26	,,	,,	,,	,,	,,
32 S.	12–3–26	2nd, 19–3–26	,,	,,	,,	,,	,,

N.B.—S =Shorthorn ; J =Jersey Follic. =Folliculitis ; Nil =Cow has shown no evidence of either form of Dermatitis.

TABLE B. The Course followed by Folliculitis in the Herd.

Cow No.	Onset.	The Eruption.		Remarks.
		Termination.	Duration.	
3	1st day	89th day	88 days	Lymphatic abcess.
8	4th day	101st day	97 days	
5	20th day	157th day	137 days	Lymphatic abcess
1	28th day	78th day	50 days	
2	30th day	78th day	48 days	
9	44th day	101st day	57 days	Lymphatic abcess.
6	44th day	101st day	57 days	
10	55th day	?	?	Sold on 104th day.
	69th day	Treatment	Instituted.	
14	71st day	91st day	20 days	
15	72nd day	248th day	176 days.	
13	88th day	157th day	69 days	
21	110th day	158th day	48 days	
22	112th day	290th day	178 days	
19	125th day	289th day	164 days	
17	131st day	248th day	117 days.	
9	157th day	248th day	91 days	Recurrence

Average duration of the Eruption, 93 days.

period June, 1925 to March, 1926. The occurrence of eight new cases after its institution suggests at first sight the inefficiency of the treatment as a prophylactic. On the other hand, the infective period of the disease was confined to 157 days (*vide* Table B.), and within this period 69 per cent. of the affected cows had been discharged free of disease, and no new cases had occurred. The actual curative value of the treatment is not apparent from the figures, but the measures did confine the eruption on individual udders and prevented the occurrence of such complications as lymphatic abscesses seen at the first visit in Cows No. 3, 5, and 9.

Folliculitis made its first appearance in Cow No. 3. When due for calving, this animal had been brought up from grass and placed in a loose box. She gave birth to a healthy calf on May 26th, and on the following morning she was returned to the shippon after an absence of several weeks at grass. After each milking, Cow No. 3, like the remainder of the herd, was returned to pasture. At the first milking, on May 31st, one of the dairy staff reported the occurrence of pustules on the udder. The second case was Cow No. 8, which calved in the same loose box and upon the same litter as Cow No. 3, on May 31st. Four days later Cow No. 8 also showed a typical pustular eruption. Now, folliculitis was at that time unknown on the premises; there were no other animals associated with the farm showing any evidence of a suppurative disease. Also, the owner reported normal unassisted deliveries in Cows Nos. 3 and 8, so that auto-inoculation of the udder from a septic birth was eliminated. These *data* lead to the conclusions that in both cows (Nos. 3 and 8) the eruption arose spontaneously, and that the origin was associated with parturition within the loose box. Within four days of the newly-functioning udders coming into contact with the bedding of the loose box, the typical lesions were observed; that is to say, the incubation period of the eruption would occupy but three days. This hypothesis was confirmed by subsequent observation, *e.g.*, Cow No. 22 was free when examined methodically on the 17th September, but revealed typical pustules on the 20th September. The further conclusions are drawn that the primary source of disease lay in the bedding of the loose box, and that the initial papule appears within about forty-eight hours, and the typical pustule within about seventy-two hours of the inoculation.

The fourteen cows which became affected subsequently to Cows Nos. 3 and 8, were not exposed to the infection within the loose-box (*vide* Table A), but once these two cows were readmitted to the milking-herd they constituted what may be termed the second source of infection. Further, the current practice of cleansing the udders of each animal before milking with a cloth common to the whole herd, was a most ready method of transmitting the infection to healthy udders.

If the occurrence of fourteen other cases be attributed to a direct spread from one or both of the two initial cases, then the escape from infection of 50 per cent. of the herd appears at first sight contradictory. As shown in Table B, at no time is there any evidence of the eruption assuming an increased virulence in its passage from cow to cow; on the contrary, the spread proceeds by slow and regular stages. Treatment was advised on the 69th day of the disease, and by the 72nd day ten cases had been reported; whereas, during the continuation of the preventive measures, only another six cases occurred and then the eruption was swept away. Moreover, these figures in themselves do not convey the full value of the inference, since at least two weeks elapsed before the dairy staff became convinced of the necessity of paying strict attention to the details of the measures advised. That is to say, the escape of 50 per cent. of the herd was due principally to the routine of treatment described in the preliminary report last year, and does not invalidate the hypothesis of a "contact spread."

As recorded in the preliminary observations, the skin shares with all other constituents of the udder the physiological changes induced by parturition; and upon the evidence of Cows No. 3, 8, 17, 19, and 22, it would appear that these changes lower the resistance of the skin to the pathogenic effects of the Staphylococcus. On the other hand, in the remainder of the affected cows the onset of the eruption bears no relationship to the date of parturition. In fact, for the sixteen affected animals the interval between calving and the onset of the pustules of folliculitis varied between 4 and 249 days, with an average of seventy-two days. Moreover, Cows Nos. 4, 18, 25, 27, 28, 29, 30, 31, and 32 were all newly-calved during the period of infectivity and yet they escaped the infection, though it should be borne in mind that, with the exception of No. 4, the freedom of these cows may have been due to the preventive measures. From these *data* it may safely be inferred that, while parturition may render the skin of the udder more liable to the infection, yet it is not an essential factor in the etiology. Differences in the quality of the skin of the udder, in the age, breed and physique of the cow, have no vital effect upon the origin and spread of the eruption. That is to say, in the absence of suitable preventive measures, folliculitis, once admitted into a graded herd, may spread to any type of "in-contact" cow.

Cow No. 9 provides an interesting example of a "return case." On the 9th September, she was pronounced clear of the eruption which had existed for fifty-seven days. The cow preserved a healthy skin until the 4th November (fifty-six days later), when typical lesions again appeared on her udder. At the time of writing, almost seven months after the last evidence of folliculitis was seen, the herd has remained free from the disease, and during this period newcomers have been introduced, several of the old patients have given birth to calves, and the months corresponding to the season of greatest infectivity last year have passed by without any sign of a recurrence. Thus it would appear that the return in Cow No. 9 constituted a new infection, and

was not due to a revitalising of organisms from the first eruption which had remained dormant or concealed during the fifty-six days interval of normality.

Impetigo.

In his former publication, in addition to presenting a table by which the more common dermatological infections of the cow's udder might be differentiated, the author laid special emphasis on the eruptions which occur primarily on the teats (*e.g.*, impetigo and cow-pox) and those on the udder as distinct from the teats (*e.g.*, folliculitis and acne). The recognition of the initial distribution is a most valuable aid in the attainment of a clinical diagnosis independent of the laboratory. For instance, folliculitis is a suppurative disease of the pilo-sebaceous glands of the skin, but these glands do not exist in the skin of the teat. Again, impetigo is a Streptococcal inflammation of the superficial layers of the epidermis, and as such may affect either the teat or the udder primarily; but, as was stated in the preliminary report and in view of present evidence is again emphasised, impetigo has been found in every case to confine its initial attack to the skin of the teats.

As seen in Tables A and C, within the 101 days total duration of impetigo, seven of the twenty-four cows exposed (*i.e.* 29 per cent.) became affected. The disease originated in Cow No. 15. This animal calved on the 17th July, was purchased and brought into the herd on the evening of the 27th July. On the following morning, when examined by the visiting clinician, the cow showed the typical contaminated lesions of impetigo on two of her teats. Though the calculations in the Tables have been based upon this latter date, yet, in the light of to-day's knowledge, it may be asserted with assurance that the cow had been affected for at least two days previous to her admission into the herd.

Thus, within seven days of her calving, Cow No. 15 became affected, but the source of infection remains undisclosed, since the cow was purchased through an agent.

Here, again, the essential factor was the introduction into the untreated herd of an infected animal, whereupon the disease spread rapidly to the teats of three previously healthy cows. The location of the initial lesion in all cases and the fact that one or more of the other teats in each individual case subsequently became affected, are very strong evidence that the disease was spread by the milker's hands, in spite of the owner's statement that the dairy staff washed their hands between the milking of each animal. The value of this assurance is seen in true perspective when it is recognised that one of the items of the routine treatment applied required each milker to scrub his hands, and particularly his nails, with a stiff brush soaked in dilute antiseptic, soapy water. A mere rinse of the hands in soap and water after milking an infected cow is insufficient. Again, the owner was advised to have all affected animals milked last of all.

As in folliculitis, there was no evidence obtained pointing to a special susceptibility possessed by the affected cows. Age, breed, and physique were not helpful, and though careful search was made for abrasions of the teats which would have given the Streptococci a site for lodgment and inoculation, such wounds were found only on two of the affected cows, while several of the unaffected animals had what are known as "chapped teats."

In the seven affected cases, impetigo arose within two to 128 days after calving, with an average of thirty-two days, so that there was no consistent association between parturition and the onset of the disease.

The periods between the onset of infection in each of these seven cows were covered by the average duration of the eruption (*viz.*, twenty-seven days); that is to say, though for the greater part of this period the lesions under treatment were scaling and contaminated, yet they remained infectious. Though artificial media inoculated with the scales produced contamination organisms which rapidly overgrew the Streptococci, yet these latter organisms remained within the drying lesions as potential pathogens. The importance of preventing the dissemination of these fomites in the shippon (or even in the milk) becomes very evident.

Allowing for human fallibility in the strict application of a newly-instituted routine, the efficacy of the preventive measures is apparent in that the eruption was confined from the herd as a whole to Cows No. 8 and 20, which were eventually discharged as cured. Also, none of the suppurative complications which the author has seen on other occasions in isolated untreated cases appeared amongst any of the affected animals.

In his previous report the author drew attention to the rapid development of the lesions—"I have carefully studied apparently normal teats at an evening milking, which, the following noon, revealed two and three vesicles." The incubation period is equally rapid (*viz.*, about twenty-four hours) as seen in the case of Cow No. 13, which was brought into the shippon after calving on August 4th, and showed a typical eruption on one of her teats when examined the next day.

Concluding Remarks.

This, and the previous report, present the information gained upon the study of outbreaks of folliculitis and impetigo in a "graded" dairy herd. Though impetigo visited the herd during the infective period of folliculitis, and though three of the cows (Nos. 9, 13 and 15) became affected by both, yet the two eruptions were easily distinguishable and clearly arose from, and depended for their propagation upon, a different series of phenomena. The principal differential characters of the two eruptions are presented in Table D.

The results appear to have justified the preventive measures of which a detailed account was presented in the preliminary report. To prevent these skin

TABLE C.—The Course followed by Impetigo in the Herd.

Cow No.	Onset.	The Eruption.		Remarks.
		Termination.	Duration.	
15	1st day	23rd day	22 days	
16	7th day	30th day	23 days	
12	7th day	30th day	23 days	
13	8th day	38th day	30 days	
——	11th day	Treatment	Instituted	
11	17th day	?	?	Sold on 24th day.
8	39th day	69th day	30 days	
20	66th day	101st day	35 days.	

Average duration of the Eruption, 27 days.

TABLE D.—The Principal Differential Characters of Folliculitis and Impetigo of the Udder.

	Folliculitis.	Impetigo.
1.—*Definition*	Inflammation of the pilosebaceous follicles of the skin.	Inflammation of the superficial layers of the skin.
2.—*Causative Organism* ...	*Staphylococcus aureus.*	Streptococcus.
3.—*Mode of Infection* ...	Direct contact. Spread by unsterilised udder-washing cloths.	Direct contact. Spread by unsterilised hands of milkers.
4. *Incubation Period* ...	About 48 hours.	About 24 hours.
5.—*Lesions*		
(*a*) Initial ...	Discrete superficial papules.	Transient erythema.
(*b*) Complete ...	Discrete superficial papules each perforated by a single hair.	Superficial vesicle; no pus.
(*c*) Scars	Brown crusts leaving a minute dimple.	Circular brownish-yellow contaminated scales leaving irregular scars.
6.—*Progress of Eruption*	Appears in successive crops, all stages present simultaneously. Untreated may spread to groin, perineum and thighs.	Lesions on one teat usually of same age. Untreated may spread to other teats and to udder.
7.—*Complications* ...	Abscess. Mastitis.	Local suppuration.
8. *Duration of Eruption*	Three Months (under treatment).	One month (under tre atment).

eruptions spreading or becoming endemic in a dairy herd is the primary aim of the treatment, for such a course modelled on the principles laid down by Hugh Begg,[2] will in itself contain a sufficient curative value. The investigation again emphasises the importance of looking with suspicion upon every newly-purchased or newly-calved cow, and of keeping such cows in quarantine until such time as the clinician is assured of their freedom from disease.

It is of interest to record that throughout the incidence of folliculitis and impetigo the symptoms were not conveyed to any member of the dairy staff.

References.

1.—Hare, Tom—"Staphylococcal and Streptococcal Dermatitis of the Udder in Dairy Cows," *Vet. Record*, 1925, v. 943.

2.—Begg, Hugh—"Clean Milk, Its Production and Protection." *Vet. Record*, 1924, iv. 733.

The chief veterinary officer of the Durham County Council reports upon what he terms an interesting case from one of the towns of the county.

A calf eight weeks old was sent into the borough for slaughter, and on inspection was found to be affected with the generalised tuberculosis. An inspection of the cows on the premises from which the calf had been sent, revealed two cows affected with tuberculosis. One of them was disseminating tubercle bacilli in her milk, and the other was a generalised case. A third cow was found strongly suspicious of tuberculosis; she is still under detention pending the result of a biological examination of the milk.

The calf, says the officer, had been fed on the milk left over from the milk round, and had doubtless been infected from it. It will thus be seen that milk containing tubercle bacilli had been sold to the public. The case emphasises the necessity for the more frequent taking of samples of milk for bacteriological examination, and also for a regular veterinary inspection of all milk-producing cows n the county area. *Evening Standard.*

The Veterinary Record.

4th December, 1926.

Professor George H. Wooldridge, F.R.C.V.S., M.R.I.A.

The election of Professor Wooldridge to the highest office of the National Veterinary Medical Association of Great Britain and Ireland, was a fitting expression of the affection and esteem in which he is held by the profession in general, and his colleagues of the "National" in particular, as well as a just recognition of his unremitting services to the Association.

Born at Stoke-on-Trent, Professor Wooldridge received his early training at St. Peter's School and Orme Boys' School, Newcastle-under-Lyme. He graduated from the Royal Veterinary College, London, in 1899, after a career of such brilliance as is shown by few students. Besides gaining honours in every professional examination, including the rare distinction of a 1st class in the Final, he secured the Centenary Scholarship in 1899, the Coleman Medal and medals for Surgery, Medicine, Anatomy, Biology, Chemistry, and other subjects. After graduating, he was appointed tutor at the Royal Veterinary College, London, and was editor of the *Veterinary Student* during 1899-1900. At the termination of this appointment he was elected Professor of Veterinary Science and Bacteriology at the Royal Agricultural College, Cirencester, which post he held until his election to the Chair of Medicine at the Royal Veterinary College of Ireland. Five years later (1908) he was appointed Professor of Materia Medica, Hygiene and Dietetics at the Royal Veterinary College, London. In addition to his present post of Professor of Medicine, Hygiene and Dietetics at this College, his multifarious duties include those of Reader and Examiner in Veterinary Hygiene and Meat Inspection in the University of London, Examiner for the D.V.S.M. of Manchester University, and for the Diploma of the Royal Agricultural College, Cirencester, Examiner in Veterinary Science to the Conjoint Board of the University of Oxford and Reading University, as well as Hon. Consulting Veterinary Surgeon to the Zoological Society. Despite the onerous nature of his duties, Professor Wooldridge has always found time—or made it—to take an active part in the social side of professional activities.

Besides furnishing a generous number of contributions to veterinary literature, Professor Wooldridge was for eight years (1906-1914) joint editor of the *Veterinary Journal*, and, as is well known, undertook the enormous task of compiling an *Encyclopaedia of Veterinary Medicine, Surgery and Obstetrics.*

His extensive experience, combined with a genial wit, have made his many contributions to Divisional meetings and congresses, both veterinary and otherwise, greatly appreciated and much sought after. It was inevitable that such indefatigable enthusiasm as that which has characterised the entire career of Professor Wooldridge must result in his election to high office in any sphere of activity with which he was associated. Thus he was elected President of the Central Veterinary Society during the years 1913-14, and 1917-18-19, and President of the Royal Counties Veterinary Society 1924-25, while he has occupied the position of Vice-President of the Section of Comparative Medicine of the Royal Society of Medicine since the inception of that section.

Professor Wooldridge's greatest claim to the grateful recognition by the profession of his inexhaustible energy and enthusiasm lies, however, in his sterling service to the "National." It is nearly a quarter of a century since he was first brought actively into touch with the work of the Association, and during the whole of that time he has striven wholeheartedly and disinterestedly for the security and advancement of what he undoubtedly foresaw to be one of our greatest assets. In 1904, 1907 and 1914 he made original contributions at the annual meetings. In 1909 he was made Hon. Treasurer (*pro. tem.*) when the then Hon. Treasurer, Mr. J. F. Simpson, was forced to resign owing to ill health, and he was appointed Hon. Treasurer at the Annual Meeting in 1910, which post he held for sixteen years. During part of that time (1914-19) he also discharged the duties of Hon. Secretary, and it is undoubtedly due to his tenacity during that trying time that there was a "National" to reorganise in the post-war period.

Great as his official services have been, it is only given to a few to know and to pay tribute to the amazing amount of unofficial work which he has performed—work which could only have resulted from a deep-rooted sense of affection for the well-being of his professional brethren. The least that the Members of the Association could do was to bestow upon Professor Wooldridge the greatest honour that lay in their power. We can only wish him a most prosperous term of office.

"Out of his self-drawing web, he gives us note
The force of his own merit makes his way."

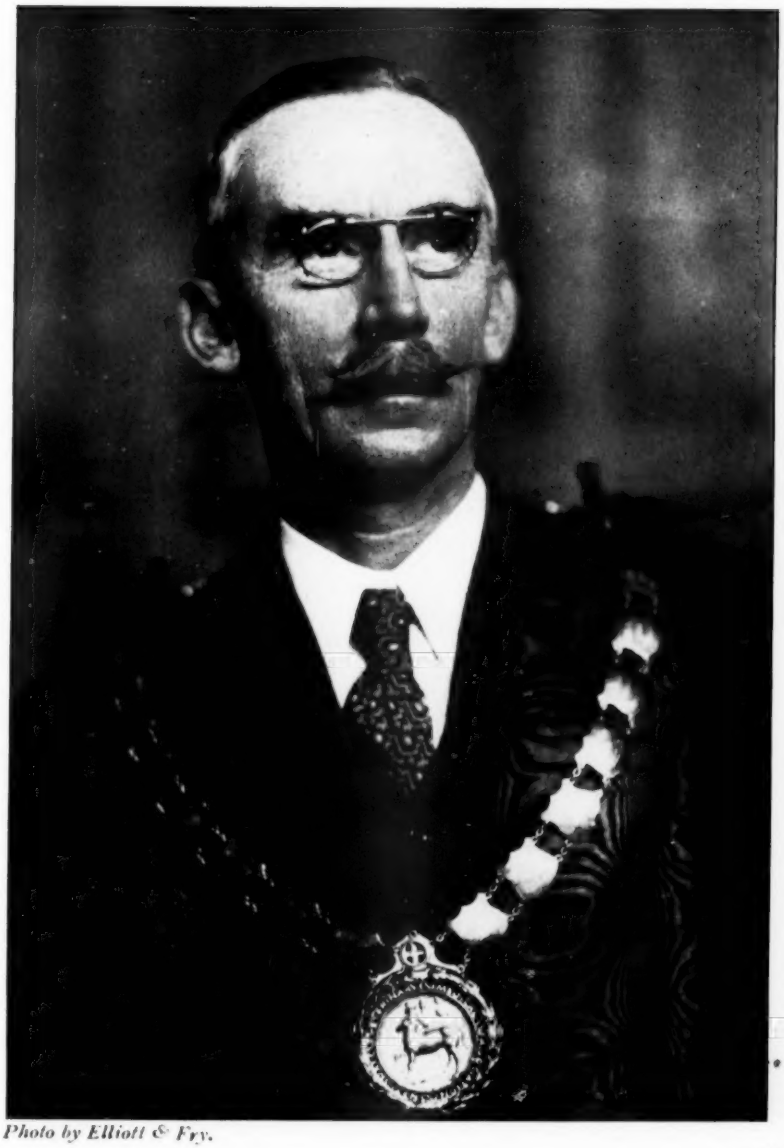

Photo by Elliott & Fry.

Yours faithfully
Geo. H. Wooldridge.

PROFESSOR GEORGE H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.,
President of the National Veterinary Medical Association of Gt. Britain and Ireland, 1926-7.

CLINICAL AND CASE REPORTS.

"Exceptions."

By Major F. L. Gooch, F.R.C.V.S., Stamford Baron.

Having heard Mr. Noel Pillers give an address on "Diagnosis," and remembering that his "text" in that address was "*Everything possible*," I was induced thereby to copy out a few notes I had made on one or two cases that at the time interested me, and which in several instances proved the necessity of using "everything possible," in order to arrive at a correct diagnosis. I have headed my notes "Exceptions" because several of the cases are certainly exceptions to the general rule.

Case I. A few weeks back I received a message asking if I would attend a cow (belonging to a pedigree Shorthorn herd) which the herdsman thought was suffering from some lung trouble. On arriving and enquiring as to the history of the case, the herdsman informed me that he had found the cow that morning in the park, breathing very hard. He brought it to the yard, gave it a drink and dressed its sides with mustard. After taking the animal's temperature and auscultating the chest, I formed the opinion that the abnormality of the breathing, which was then stertorous, was not due to any affection of the lungs, and my attention was drawn to a swelling on the neck. At that time I was on the near side of the animal. I went to examine the off side, when, to my surprise, I detected the crackling condition under the skin of the off shoulder, and came to the conclusion that the cow was suffering from "blackquarter." I informed the herdsman of my diagnosis, and told him the cow would be dead in a few hours. The cow actually died two hours after I left. This case is recorded as an "exception" because the cow was more than three years old, and at the time of the attack was pregnant with its second calf, and due in about one month.

Case II. I was called the other day to attend a Shorthorn bullock suffering from what looked similar to "piles" (in the human subject), all round the anus. Round-looking tumours, about the size of a marble, had been present for some time, and those at the superior part which appeared first had been treated by the owner with some counter-irritant. When I saw them they were rough on the surface and bleeding, whilst those at the inferior part were quite round, and not very obvious from the outside, but when the animal passed its fæces, they were then seen very plainly. As the owner had treated the tumours for some time I decided that the quickest way was to excise them, for which purpose I used a home-made wire écraseur. I removed all the top ones that presented a ragged appearance, at one operation, and the others in which the skin was not broken, separately, afterwards dressing with an ordinary "wound" liniment, and in a short time a complete recovery was made.

Case III. A cockatoo, pink in colour, had been in confinement for at least forty-three years, had not at any time been "mated," and never before this year had laid an egg. This summer, however, she laid six eggs. two of which I have preserved. Does this constitute a "record" for the period in which a bird, in confinement, had its reproductive organs latent, then becoming fertile ?

Case IV. In August I was asked to operate on a yearling Shire colt that was suffering from a very bad scrotal hernia on the off side. On examining the scrotum it was with difficulty that I was able to detect the testicle, and I should not have consented to operate until the colt was older, if the owner had not pressed for its performance. I might here state that earlier in the year the owner had asked my "locum" if he would destroy the colt as he did not consider it would be worth rearing from an economic point of view, but my locum had advised him to keep it a little longer. Under the circumstances, I agreed to operate in three days' time, and for that purpose I had the colt placed in a loose box, with a small quantity of food, none to be given the night before the operation. Having decided upon the "covered" operation, I had the colt cast, with the ordinary side-lines, on his near side. He was not placed on his back, for fear that the testicle might pass from the scrotum up into the abdominal cavity. My son then chloroformed the animal, and I, having cleansed the scrotum and surrounding tissue with petrol, tried to find and grasp the small testicle on the affected side. I secured it, and placed it, with the skin, in an ordinary steel castrating clam, after making sure that I had included no bowel. Grasping the clam, and getting the skin tight over the testicle, I made an incision through the skin. I had hoped not to cut through both tunics, but they were much thinner than I anticipated, and accidentally I cut quite through to the testicle. After an exposure of the testicle, to make sure of its removal, I operated with the actual cautery, having previously secured the cord by placing a silk stitch through it. I then proceeded to dissect the tunics from the skin, which I did to the length of twelve inches. I then placed an ordinary caustic wooden clam round the tunics and cord, as high as I could get it and, having fixed it there, I removed about ten inches of the tunics and tissue and allowed the clam to pass inside the enlarged scrotum. I then removed the other testicle with the actual cautery and, having painted all the surrounding tissue with a solution of tincture of iodine, I removed the side-lines and allowed the colt to get up as soon as the effect of the anæsthetic had passed off. I had told the owner previously that I should turn the colt into the adjoining grass field, rather than run the risk of infection in a dirty loose box. Unfortunately, what might have proved an untoward circumstance happened, as when another colt was taken into the field for company, both of them galloped the whole length of the field, a distance of over 600 yards, and I was afraid my clam would get displaced, but to my relief nothing serious happened, and the colt made an uninterrupted recovery. The wooden clam was removed after a period of eleven days from the time of operation. I saw the colt

a short time back, and to my surprise, nature had so reduced the size of the scrotum that it was almost impossible to see which was the affected side, although before the operation the affected side was lower by about nine inches than the healthy one. I have recorded this case under "exceptions" for two or three especial reasons:

(1) Because of the accidental severing of both the tunics and the exposure of the testicle, cord and tissue to the air, I might have set up peritonitis.

(2) By turning the colt out into the open immediately after the operation, I ran the risk of the clam being displaced, and the bowel descending again, as I placed no stitches in the scrotum.

(3) This colt was only twelve months old.

Case V. I believe that at a recent meeting of the "Central" Major F. G. Hobday shewed a salivary calculus which he had removed. I have in my possession a salivary calculus which I removed from a grey Shire gelding, five years old. The calculus was about 3½ inches long and 1¼ inches wide at its widest part, and weighed nearly five ounces.

It was quite by accident that I discovered the calculus. I was asked to examine the horse's teeth, as he was not feeding well. I happened to notice a swelling of the buccal membrane on the near side. Placing a gag in the animal's mouth, I found a hard substance. Cutting down upon it at its lowest extremity, I tried to remove the calculus with my finger and thumb, but found this impossible. I then made an incision nearly the whole length of the calculus. I tried to grasp it with a pair of tooth forceps, but the upper extremity being much broader than the lower, I broke a piece off the calculus before I was able to remove it. The wound was dressed for a short time with an antiseptic lotion, and afterwards healed very quickly.

Case VI. Just before the death of the late Mr. John Malcolm, I was asked to examine a large Shire gelding (the property of a miller) which had developed an enlargement of the off hock. I found that the enlargement was soft, and came to the conclusion that pus was present, but deep-seated. I treated with ordinary embrocation and in a few days an abscess formed, and I evacuated a large quantity of pus. The enlargement of the hock subsided, the wound healed, and the lameness had nearly passed off, when I noticed that the near hock was swelling, and that the animal was suffering pain and was lame in the near limb. I was unable to give the owner a satisfactory explanation as to the cause of the other hock being affected. It was treated as the other hock, with the same result. About a fortnight after the animal had recovered, however, a swelling was noticed in the lumbar region of the off side, and I concluded that I had to deal with some septic trouble, I decided to examine *per rectum* for the cause. I then discovered that there was a thrombus of the iliac artery on the off side, the artery being very much enlarged, and hard to the touch. There was no pulse beat to be felt. The case had now been under treatment for some time, and the owner was naturally a little impatient, wondering whether it was worth while to continue the treatment. I was unable to give him a very hopeful prognosis, but he asked me if I would like a second opinion. I welcomed his offer, and called the late Mr. Malcolm in consultation. Before Mr. Malcolm came I again examined *per rectum*, and found what I considered a smaller vessel, anteriorly placed to the iliac, in which I was able to take the pulse quite easily.

After giving Mr. Malcolm the history of the case, and explaining what I considered to be the cause, he examined the animal *per rectum*, and found the thrombus, and also the vessel in front, which he considered was an auxiliary vessel. After talking the case over with me, he advised the owner to turn the patient out in the field and wait the result of the action of the auxiliary vessel. I examined *per rectum* every few days and found the auxiliary vessel growing larger in diameter. At the same time, the swelling in the lumbar region was becoming smaller, and from that time onward improvement took place, and the patient entirely recovered, and returned to its ordinary work.

I record this case as an example of the necessity of carrying out the injunction of Mr. Pillers, to do "everything possible" in order to arrive at a correct diagnosis.

In answer to Mr. Johns' query in *The Record* of November 27th, a few years back I had to attend a Shorthorn cow belonging to a dairyman in our town, that was unable to deliver her calf. The owner had tried himself, and after some time at work, I found it impossible to deliver, the cow being prostrate and very weak. I slaughtered the animal, and then found an enormous calf which, upon being weighed, turned the scale at 11st. 8lbs. This was confirmed by a butcher who would not believe me, but would go back with me, taking his own steel yards, and then remarked that he had killed many a calf (for veal) months' old, that was not so heavy. The 11st. 8 lbs. was the weight of the calf without any placental membranes.

Diaphragmatic Hernia.

By R. A. Edwards, M.R.C.V.S., Rochester.

Subject. Red and white milch cow in fairly good milking condition: had three calves.

History. About 7 months previously she was attended for hoven. She recovered in three days; had occasionally since then been "blown" for a few hours, an antitympanitic laxative drench relieving the symptoms.

October 12th, 1926. Found the animal with rumen distended, and no action of the bowels. Probang passed, but no return of gas. Rumen tapped with trocar and canula, revealing no gas, only frothy fluid. This, however, did not reduce the distension. I injected into the rumen ac. carbol. ℥ ss. in about one pint of water, gave an antitympanitic purgative drench, and instructions for food to be withheld and left the canula *in situ*.

October 13th. Rumen still distended, no action of the bowels, animal ruminating.

October 14*th*. About the same, still ruminating, no action of the bowels. Auscultation showed weak normal heart sounds.

October 15*th*. Rumen distended, no action of the bowels. Rumination now stopped.

October 16*th*. Bowels commenced to act; no rumination, offered food, which was refused.

October 17*th*. Bowels acting; rumen still distended, no rumination; animal getting weaker, refused food. About a shovel full of slate-coloured pultaceous material which had exuded through the canula was on the floor. Owner decided to have animal destroyed.

TREATMENT. Daily injections through the canula into the rumen of antiseptics.

Purgatives: mag. sulph., aloes, treacle, ol. croton + linseed oil, calomel; enemata, and "back raking."

Nerve Stimulants, etc: Nux vomica, ammon. carb., spts. ammon. aromat., barium chloride, tartar emetic.

POST-MORTEM. This examination shewed the rumen to contain an extraordinary amount of fluid. There was a rupture of the diaphragm, through which the reticulum had passed, and was adherent to the pericardium, and part of the lung. In the reticulum were found a piece of slate, nails, and portion of a crusher for cake.

In Mr. Gill's case, recorded in the *Veterinary Record*, October 16th, 1926, there was no rumination; in this case there was, and in each there was a considerable amount of fluid in the rumen.

COLONIAL VETERINARY APPOINTMENT.

The following appointment was made by the Secretary of State for the Colonies during the month ended 10th November, 1926:—

Name.	*Appointment.*	*Colony.*
Lt. J. Macdonald, M.R.C.V.S.	Veterinary Officer.	Nigeria.

Mr. W. T. S. Atkinson has resigned the position of veterinary inspector for the Castle Donington district, and the area has been added to that worked by Mr. R. L. Phillips, of Loughborough.

Valentino's father was an Italian veterinary surgeon. Valentino tried a great variety of callings until he determined finally on film acting, made a great reputation, and left a large fortune.

. . . . . .

The fathers of Mussolini and of Masyrk were blacksmiths; "in fact, I believe (writes 'H. G.') that Professor (President) Masyrk was himself one."

. . . . . .

Johann Wolfgang Goethe, who was born in Frankfort-on-the-Maine, on August 28th, 1749, and became Germany's most famous poet, was the great grandson of Hans Christian Goethe, who carried on business as a farrier in the middle of the seventeenth century in the little town of Artern, in the Grafschaff of Mansfeld in Thuringia. Goethe was also a great naturalist and comparative anatomist.

ABSTRACTS.

EXPERIMENTS ON FOOT-AND-MOUTH DISEASE.

As a result of the discovery by Vallée and Carré, of a particular strain of virus, type (O), with which it is possible to reinfect animals recently recovered from a second strain, type (A), Lebailly has investigated some outbreaks in Calvados, due to a virus identical with type A.

He confirms the contention of Vallée and Carré that animals which have been infected with (A) or with (O) cannot, for several months, be reinfected with the same strain, but are perfectly susceptible to the other strain, the second attack being equal in severity to the first. During the febrile reaction, the blood, milk, urine and occular* secretion are infective, but the virus rapidly disappears with the fall in temperature.

The author is convinced, in particular, that the virus does not persist in the foot lesions.* From cattle which had recovered one to two months previously, fragments of tissue were obtained from regions where the trace of lesions was still visible. Three animals which were inoculated subcutaneously and intramuscularly with this material remained unaffected and subsequently reacted to a test dose of virus. [Ch. Lebailly. Experiences concernant le virus aphteux. *Comp. Rend. de L'acad. des Sciences.* 1926 October. T. 183. No. 14, p. 578.].

****Note.*—Lebailly, in a previous communication, had noted that four days after the first appearance of the vesicles, cattle were no longer capable of infecting susceptible beasts placed in contact with them.**

R. E. G.

PROLONGATION OF LOCAL ANÆSTHESIA.

G. DE TAKATS (*Surg., Gynecol. and Obstet.*, July, 1926, p. 100) states that a combination of tutocain—a synthetic derivative of an amino alcohol—with 0·1 per cent. solution of eucupin (isoamylhydrocuprein) and the usual dose of adrenaline causes a post-operative analgesia of about twenty-four hours. This combination of tutocain and eucupin is soluble in water, can be sterilised, does not counteract adrenaline, and is not toxic in the quantities stated. It does not cause any tissue reaction, or any disturbance in wound healing, as shown by intracutaneous tests, microscopical sections, and a hundred operations performed with this solution. Tutocain was used in a 0·2 per cent. dilution to replace 0·5 per cent. novocain, and 0·5 per cent. tutocain instead of 1 per cent. novocain, because the dermal wheals, especially with the addition of adrenaline, were found to produce longer anæsthesia. An anæsthesia lasting longer than twenty-four hours was not considered desirable owing to the possibility of trophic disturbance.

R.C.V.S. OBITUARY.

WOOLSTON, Percival Charles, 67 St. John's Street, Bedford. Graduated London, 17th December, 1890. Died 25th November, 1926.

DIVISIONAL REPORT.

Derbyshire Division.

A meeting of the above Division was held at the Royal Hotel, Derby, on Tuesday, October 12th, 1926. The President, Mr. E. Marrison, occupied the Chair, and there were also present Messrs. W. T. S. Atkinson, H. S. Cockburn, J. C. Deville, J. C. Heather, W. J. Ironside, A. Levie, F. T. Prince, H. W. Steele Bodger, E. Wilkinson, and O. V. Gunning, Hon. Secretary. The *visitors* included Mr. W. Tweed, Sheffield, and Mr. J. Wilson, Castle Donington.

An apology for absence was received from Major T. V. Bagshaw.

The *minutes* of the last meeting were confirmed.

New Member.—Mr. H. S. Cockburn (Eastwood) was elected a member of the Division.

Election of Officers.

Mr. E. Marrison said he had very much pleasure in proposing Mr. G. Furness as *President* for the coming year. This was seconded by Mr. Deville, and carried unanimously.

The election of the remaining officers was as follows: *Vice-presidents*, Mr. E. Marrison, Mr. F. T. Prince and Mr. H. McIntyre (to become President 1928); *Hon Secretary*, Mr. O. V. Gunning; *Hon. Treasurer*, Major T. V. Bagshaw; *Hon. Auditors*, Messrs. Ironside and Evershed; *Council*, Messrs. McClement, Cockburn, Steele Bodger, Wilkinson, Deville, and A. Levie.

Representatives to Council N. V.M. A.—Mr. W. J. Ironside and the Hon. Secretary.

Correspondence.—The Honorary Secretary read a letter from Lady Stockman thanking the members of the Division for their expression of sympathy in the death of Sir Stewart Stockman.

R.S. I. Delegate's Report.—Mr. W. J. Ironside furnished a report of the Imperial Congress of the Royal Sanitary Institute, at which he acted as a delegate from the Division.

R.C. V.S. Council Election.—It was resolved, on the proposition of the President seconded by the Hon. Secretary, that the Derbyshire Division should re-nominate Mr. A. Levie, F.R.C.V.S. as a prospective candidate to the Council R.C.V.S.

Mr. H. W. Steele Bodger then presented a paper on "The Production of Graded Milk." (This paper receives separate publication.—Ed.). Discussion upon it was postponed to the next meeting.

Interesting Cases.

Mr. H. S. Cockburn, Eastwood, exhibited a tuberculous spleen, taken from a cob, five years old. The spleen weighed 9½ lbs. Mr. Cockburn stated that the remarkable thing was that the animal did not react to the subcutaneous tuberculin test.

The President exhibited the kidneys and a tumour taken from an Airedale dog. The dog, which had appeared in good health, suddenly began to get very fat and the owner, thinking he was over-feeding him, cut down his rations. The first intimation of illness was that while the owner had the dog out for a walk, the animal jumped a wall and then gave a terrible scream. The dog also showed pain that evening and on the following morning was presented for treatment. Rectal examination revealed a large tumour in the abdominal cavity adjacent to the rectum. Destruction was advised. On *post-mortem*, two greatly-enlarged kidneys were found (they had more the appearance of enlarged bovine cystic ovaries), and also the tumour referred to. This had the appearance of a lipoma.

At the conclusion of the meeting a hearty vote of thanks was accorded Mr. Steele Bodger for his able paper, and to the President for his conduct in the Chair.

The members afterwards had tea together

O. V. Gunning,
Hon. Secretary.

Dutch Researches into Foot-and-Mouth Disease.

Replying in the House of Commons, on November 25th, to Mr. H. Williams, Mr. W. Guinness, Minister of Agriculture, said that recent researches into foot-and-mouth disease had been carried out by scientific workers in Holland and the Netherlands Government had been good enough to provide the Ministry with details. The experiments claimed to show that the virus of foot-and-mouth disease existing in the flesh of animals infected with that disease was destroyed by the lactic acid which in a short time developed in the dead tissues. It was argued that carcases of animals imported from the Continent to Great Britain could not carry infection, since sufficient time would have elapsed between slaughter and exposure here to permit of the destruction of the virus. The Ministry, however, possessed conclusive evidence that disease was introduced into Lanarkshire by imported carcases of pigs, and again that disease had been spread in this country by means of carcases of animals drawn from an infected farm, but which showed no visible indications of disease. The Dutch experiments dealt with flesh only, but the Ministry was conducting experiments on the duration of the virus in all parts of the animal, and results had already been obtained indicating that certain parts of the carcase remained infective. Under these circumstances he was not prepared to remove the prohibition of the import of fresh carcases from countries infected with foot-and-mouth disease.—*The Times.*

A serious world scarcity of meat, milk, butter, cheese and bacon is anticipated in a treatise issued by Professor J. T. Share-Jones, Director of Veterinary Studies at the Liverpool University. He quotes authorities to show that the United States, which has hitherto been an exporter of these foodstuffs, will, in the near future, be an importer and competitor with Great Britain for the supplies from Argentina and New Zealand. The highest degree of scientific effort should be directed towards increasing production, conserving products, and controlling distribution. In view of our position as a nation, there is, he says, no room for inefficiency, but the services of highly-skilled medical and veterinary men are required.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest inclusion in these columns.

Diary of Events.

Dec. 6th—Meeting of the Editorial Committee N.V.M.A., at 4-30 p.m.
Dec. 7th—Meeting of the Lancashire Division at at Manchester, 3-30 p.m.
Dec. 7th—Membership Examinations (written).
Dec. 9th—Membership Examinations (oral).

Appointments in India.

With reference to the advertisement which appears in this week's issue for (A) an Officer for Research Work; (B) a Professor of Pathology, at the Punjab Veterinary College, Lahore, we are advised that for special appointments, entailing special training and ability, the emoluments offered are insufficient.

Animal Diseases Research Association of Scotland.

The post of Senior Research Assistant to the A.D.R.A. of Scotland, Moredun Institute, Edinburgh, rendered vacant by the promotion of Mr. W. A. Pool, M.R.C.V.S., to be Director of the Research Institute, has been filled by the appointment of Mr. H. Preston, M.R.C.V.S., D.V.S.M., who has been in the Association's service as Junior Research Assistant since early in the year. Steps are now being taken to fill the Junior Research Assistant's post, in order that the staff may be brought up to the strength at present approved by the Development Commissioners and the Board of Agriculture for Scotland.

R.C.V.S. Fellowship Examination.

An examination for the Fellowship Diploma was held at 10 Red Lion Square, W.C.1, on Tuesday, 23rd November, 1926, when the following candidate was successful:—

Major Clarence Henry Southgate Townsend, O.B.E., T.D., M.C.

Thesis: "Some Aspects of Veterinary Surgery."

Examiners: J. A. W. Dollar, Esq., M.R.C.V.S., F.R.S.E.: Professor J. Macqueen, F.R.C.V.S.

Chairman: G. H. Livesey, Esq., M.R.C.V.S.

Imperfections in Dairy Cattle.

A Remarkable Instance.

"The owner of a herd of pedigree dairy cattle writes that four of his heifers, recently calved, are giving milk in 'three-quarters only,' and asks whether any explanation can be given of so remarkable a circumstance," says *The Times* agricultural correspondent in a recent issue of the paper. A request for fuller information concerning the animals and their ancestry only deepened the mystery, for there appears to be nothing in their pedigrees to suggest an hereditary explanation. The dams of all the heifers were at one time members of the herd—one is there still—and all were free from any trace of malformation of bag. The sire was the chief stock bull, and his progeny hitherto, and they have been numerous, showed no blemish of the kind mentioned.

"The point is interesting for breeders of cattle, and would seem to be a proper one for investigation by students of animal breeding research. Defective quarters in cows are not uncommon, and are usually assigned to some other cause than heredity, but the experience of the farmer in question is so exceptional in the number of animals affected as to point to some common, if mysterious, explanation. Owners of live stock have to contend with many impediments to consistent and generous success, and no class more than dairy farmers. Our breeds of cows have proved themselves to be wonderfully amenable and responsive, and, while it might not be correct to say that the more highly the utility properties of animals are cultivated, the greater is the risk of misfortune, it can be said that the very best strains or types enjoy no degree of immunity from the ailments or imperfections common to all kinds. In the case in question the high proportion of defective teats raises presumption of hereditary taint, but the owner has satisfied himself that there is nothing in the breeding to account for his disappointment."

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Post-Graduate Study.

To the Editor of The Veterinary Record

Sir,—I was very considerably interested in the editorial article on post-graduate study in your issue of 20th November, and just a little disappointed by the sentence: "None of our veterinary institutions is enterprising enough to throw open its doors and provide a course of special instruction suitable for the requirements of the general practitioner." It is now some years since this College instituted *Short Courses for Practitioners*. A week towards the end of September has been devoted to courses on special subjects that it was considered would be of interest and value to the general practitioner. Our experience, however, up to the present has not been of the most encouraging nature; for though those who did attend were keen and enthusiastic, the number attending has never been more than moderate. It has to be remembered that to organise and conduct courses that will reflect credit upon those who are responsible for them means a great deal of labour and some expense. And unless the courses are properly and conscientiously conducted, they had better be left alone.—Yours faithfully,

O. Charnock Bradley.

Royal (Dick) Veterinary College,
Edinburgh.
24th November, 1926.

The "Trojan Bull" Case.

To the Editor of The Veterinary Record.

Sir—Will you please correct a slight mistake in report of this case. I certainly did not say "If hæmatoma there would have been no swelling." This, surely, is very obvious. Another point is, I am reported to have said that if the condition, as seen, had been due to rupture, then pain would have been evidenced. Everyone knows that rupture does occur without manifestation of pain. The wire referred to was of galvanised iron, rigid, curved, and about same circumference as a thermometer case—length 22 inches. This bull was stall fed always, and had never grazed in an orchard, paddock or field.—Yours faithfully, J. W. Baxter.

16 Halsey Street,
London, S.W.3.
29th November, 1926.

To The Editor of The Veterinary Record.

Sir,—In these days, when you experience some difficulty in securing a sufficiency of interesting material for your weekly output in the *Veterinary Record*, it must be gratifying to find that you have "struck it rich" by publishing, though belatedly, the evidence led in the "Trojan Bull" case. I have no desire to criticise the opinions given by any of the witnesses, who were, without doubt, honest according to their experience and belief, but I think no one could read the evidence given by Mr. Wilson, of Lanark, without being struck by and feeling proud of his exceeding fairness and candour—his very evident desire that he should in no way overstate the case to his client's advantage or the disadvantage of the defenders. The whole spirit of his evidence is characteristic of his uniform carefulness and uprightness in his daily practice of his profession.

The educative value to the inexperienced in cattle practice of your publication of this evidence and of the cases related in the crop of letters it has inspired, is of material importance. One might opine that another such remarkable case—the swallowing of a piece of wire twenty-two inches long—is not likely to occur in many years, but if the foreign body was big, so was "Trojan." He was a monster bull and it is presumable that he could swallow the wire referred to as easily as a ten cwt. cow could swallow a much shorter one. The most remarkable case with which I ever met when in practice was that of a large cow with an abscess in front of the ninth rib on the left side. When it was opened by the knife, after exploratory puncture, the blade struck the prongs of a fork and I drew out an ordinary carving fork that had a very loose finger piece. The fork would be a little less than twelve inches long.

Some comment has been made by correspondents on the failure of Mr. Wilson and others to connect the occurrence of the abdominal wall abscess with the possible existence of a foreign body. It is easy to be wisely conjectural after the event. Moreover, the site of the abscess was a place probably more prone than any other part of a bull's body to external punctured wounds by any sharp substance that might be on his bed in the house or in the field, while the possibility of abrasion and infection during mating is not too remote.

In the swallowing of awkward foreign bodies the successful attitude is "the nose high in the air," and it is unquestionable that when a bovine experiences any difficulty in placing anything (potato, root or foreign substance) between the molars for mastication it is inevitably disposed to open its mouth unduly wide in the attempt, and it does so with the nose held high, when accidental swallowing inadvertently occurs. Although "Trojan" had been house-fed for a long time prior to his illness and death and was never out unless on duty, he had great freedom in his binding in his large special stall. Excepting the dog, there is probably no domesticated animal so prone as the bovine (when put out to the fields after a period of housing) to exhibit a frolicsome, prancing, care-free demeanour, and this strikes one as remarkable in the case of a species so temperamentally stolid under ordinary conditions. While this state of mind persists, these animals are peculiarly apt to take an interest in things they find in the fields that have no food value (pieces of bone, wood, leather, iron—it may be wire, etc.), to pick them up and nonchalantly make mouth play, to their own undoing.—I am, Yours faithfully,

Hugh Begg, County Veterinary Inspector,
County Offices, Hamilton.
29*th November*, 1926.

Inspection of Cattle in Lancashire.

To the Editor of The Veterinary Record.

Sir,—On behalf of the Burnley Farmers' Association, I beg to thank the Editor for his article in the *Record* of 30th October, concerning this prolonged fight with the Lancashire County Council Sanitary Authority for our rights. The article has been passed on to the Lancashire branch of the National Farmers' Union, and will be openly read at their next meeting.

The fight is now finished, and below is a copy of a letter received from them last week.—Yours faithfully,

G. C. Lancaster.
35 Church Street,
Burnley, Lancs.
November 24*th*, 1926.

"Public Health Department,
County Offices,
Preston.

"Dear Sir,

Milk and Dairies (Consolidation) Act, 1915 and the Tuberculosis Order, 1925.

"In reply to yours of the 12 ult., I desire to inform you that at the meeting of the County Public Health and Housing Committee held on the 20th ult. a resolution was passed authorising me to employ for the purposes of the above Act and Order the veterinary surgeons whose names are on the list of Veterinary Inspectors appointed by the County Council for the purposes of the Diseases of Animals Acts or appointed by the County Council in connection with the Milk (Special Designations) Order 1923.

"This resolution was confirmed by the County Council on November 4th, 1926.

"Yours faithfully,
J. J. Butterworth,
County Medical Officer of Health."

"W. F. Moorhouse, Esq.,
County Chambers,
Fishergate,
Preston."

The Use of Distemper Bacterin.

To The Editor of The Veterinary Record.

Sir,—*Re* the veterinary meeting at Cardiff, reported in the *Veterinary Record* of November 20th, I am surprised at the unfavourable experience in the results of the use of distemper bacterin, as quoted by members present. I may say, after years of experience in the treatment of canine distemper, both by preventive and curative measures, that I have had great success in the use of Parke, Davis & Co.'s bacterin as a preventive measure. Before exhibition at large and open championship shows, I have treated dozens of exhibits of all breeds with this bacterin and have never had any unpleasant sequelæ. For our large championship show at Bingley Hall next week I have already inoculated several dogs and puppies, and I am certain, from past experience, that there will be no infection afterwards.

As regards curative treatment with Parke, Davis & Co.'s bacterin, I have inoculated recently scores (including Alsatians), all of which recovered and I cannot bring to mind a single case where it has failed.

If I might be so bold I would suggest that if the directions sent out with Parke, Davis & Co.'s bacterin are carefully followed, there is no doubt that good results will accrue. Another important point, which should weigh heavily with the profession, is that the remedy is on no account supplied to the laity, as are a good many of the toxins on the market.—Yours faithfully, John Young.

122 Sherlock Street, Birmingham.

The Editor acknowledges the receipt of the following:

Report of a meeting of the Australian Association for the advancement of Science, from Professor J. D. Stewart, University of Sydney.

Report of a meeting of the Midland Counties' Division, from Mr. H. J. Dawes, Hon. Secretary.

National Veterinary Medical Association of Great Britain and Ireland.

EDITORIAL OFFICE: 10 Gray's Inn Square, London W.C.1.

All communications relative to the literary side of the Veterinary Record must be addressed to the Assistant Editor, "Veterinary Record," 10 Gray's Inn Square, W.C.1